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PROPOSED PROGRAMME BUDGET FOR THE BIENNIUM 1994-1995

Integrated management information system

Fifth progress report of the Secretary-General

INTRODUCTION

1. The General Assembly, by its resolution 43/217 of 21 December 1988, approved the implementation of phase I of the integrated management information system (IMIS) at a total cost not to exceed $28 million at 1988 rates. Details of the Secretary-General's proposal for the project are contained in his report to the General Assembly at its forty-third session 1/ and in the related report of the Advisory Committee on Administrative and Budgetary Questions (ACABQ). 2/ The purpose of the project is to develop an integrated system for the processing of, and reporting on, administrative actions at all major duty stations. This system will replace the numerous independent computer programs at Headquarters and other duty stations, many of which were written up to 25 years ago and mostly for regular budget activities. These systems are no longer able to provide the controls needed by management at a time of rapidly changing needs and increasing demands made on the administrative sector to support peace-keeping activities and those financed from extrabudgetary resources. IMIS will also provide duty stations away from Headquarters with tools not currently available to support their administrative needs.

2. The Secretary-General has since submitted four progress reports, in 1989, 3/ 1990, 4/ 1991, 5/ and 1992. 6/ The first progress report provided information on the general work plan for the first phase of the project. In his second progress report, the Secretary-General described the progress achieved in 1990. It also provided a detailed analysis of the benefits to be derived in each of the major administrative areas. The main activity during that year was the detailed analysis of user requirements in the Finance, Human Resources and General Services areas.

3. The third progress report described the progress achieved in 1991, the plans for the period mid-1991 to 1993, an analysis of the expenditures and a further elaboration on the expected benefits. The fourth progress report provided information on the work accomplished in 1992, details on the expected benefits to be derived from the implementation of the system, a list of systems to be replaced by IMIS and a revised cost estimate for the project.

4. In 1992, in accordance with General Assembly resolution 46/185, part B, section IV, paragraph 6, a panel of independent experts evaluated the IMIS project. As mandated, the report of the Panel was submitted to ACABQ, which reviewed it in conjunction with the fourth progress report of the Secretary-General. It contained a review of the technology, an assessment of the management of the project, a detailed description of the progress of work since October 1991, the work plan until the completion of the project, the expected benefits and estimated costs for the entire project and management consideration for the maintenance of the system after its implementation. The executive summary of this independent evaluation was annexed to the ninth report of ACABQ at the forty-seventh session of the General Assembly. 7/ The experts' conclusions were very positive with regard to the way the project had been managed from both a technical and an administrative point of view. They also drew the attention of the Organization to the tasks that had to be accomplished to ensure the successful implementation of the system, notably the training of staff.

5. The present report provides information on the progress of work to date, the successful implementation at Headquarters of the first release of the system, the progress of work since the end of 1992 and the difficulties encountered. The revised cost estimate of the project and estimated maintenance costs for the next biennium are provided in document A/46/6 (Section 29) as part of the proposed programme budget for 1994-1995.

I. PROGRESS OF WORK AND WORK PLAN UNTIL MID-1995

A. Release 1 implementation at Headquarters

6. A first series of applications related mainly to the human resources area was successfully implemented at Headquarters on 24 September 1993 (see para. 9 (a) below). Almost 400 users in executive offices, in the Office of Human Resources Management, in the Field Operations Division and in the Office of Programme Planning, Budget and Finance started working on the system as of that date, completing transactions, updating records or simply inquiring data. The introduction of a new system is always problematic. Although difficulties have been encountered, they were all relatively minor as compared to the size of the applications implemented and taking into consideration the large number of users who were confronted with a completely new technology and change in administrative procedures.

7. After the first weeks of operation, both the system and the technical infrastructure have proven to be extremely stable. The IMIS team, with the help of the training team, provided extensive support to the users to help them to overcome the difficulties encountered. These difficulties related mainly to the data converted from existing systems (some records were not complete or up to

date) and to the ongoing reorganization of the Economic and Social Departments. A users' group with representatives of all user offices was established and meets regularly with the IMIS team and Electronic Services Division staff to review issues and be briefed on solutions or improvements already made to the system.

B. Training

8. The success of the implementation of the first release was also due, to a large extent, to the training strategy adopted by the Organization. After reviewing the various alternatives available, it was in fact decided to supplement traditional training courses with modern tools geared specifically to training in computer systems. The key elements of this strategy are: (a) maximum reusability of the training material at all duty stations after completion of the training programme at Headquarters; (b) easy maintenance of the training material and tools since they are fully integrated with the system; (c) availability of a self-study training programme integrated with the system.

9. The training programme for IMIS is composed of the following elements:

(a) Four types of training courses:

(i) Six video courses, one providing a general overview of the system and five providing more specific information on the contents of each release. Two were produced for release 1;

(ii) Thirteen instructor-led courses, which aim at introducing new concepts such as the new accounting code structure. Four were developed for release 1;

(iii) One computer basics course that aims at familiarizing users with IMIS operations. This course was developed for release 1;

(iv) Eighty-two initial implementation courses for "hands-on" practice of the various types of transactions that can be processed with IMIS. Each course comprises a general overview of the subject and practical exercises. The training booklets given during the classes are designed to be usable also for self-study training. Seventeen courses were developed for release 1;

(b) A system of on-line help composed of screens that are designed to provide various levels of information, starting with basic information on the scope of the system or of the application being used and allowing the users to choose to view more detailed information as required up to the level of fields;

(c) Desk procedures, which provide details on the entire procedure to be followed for performing given transactions. They cover not only navigation within IMIS (which screens to call for each transaction, for example) but also the procedures outside of IMIS before and after accessing the system. They constitute in fact a "procedural manual" which will cover all the transactions performed through IMIS, ensuring consistent procedures throughout the Secretariat. It is the first time that such a comprehensive manual is

available. The desk procedures developed for release 1 comprise 126 procedures in the human resources area, 34 in the finance area and 30 in the geographic locations area;

(d) Job aids, consisting of a fast reference tool and listing by subject-matter which screens need to be accessed to perform a specific transaction;

(e) A practice database accessible on line by all users both before and after the initial implementation of IMIS to enable current and future users to practice using the training material developed.

10. Two dedicated training rooms with a total of 32 workstations and projection facilities were established. The training courses for release 1 started at the end of June and continued until two weeks after the implementation of release 1. More than 400 staff attended the training programme for release 1. The training has been jointly managed by the Office of Human Resources Management Training Service and the IMIS project team.

C. Implementation schedule

11. In view of a number of difficulties that were encountered and which are described below in more detail, the Organization reviewed the implementation schedule of the system. It was decided that the quality of the software had to be given priority over the meeting of deadlines and a new implementation schedule was established:

(a) Release 1 (September 1993): Authorization and transaction controls, personnel and posts database for staff administered at Headquarters, new accounting coding structure, processing of personnel actions;

(b) Release 2 (January 1994): Processing of staff entitlements and of applications for employment, medical insurance enrolment;

(c) Release 3 (May 1994): Expenditures controls, which include general ledger, funds distribution and execution, accounts payable, requisitioning and cash control, accounts receivable, banking and cash management, travel and transportation, leave and attendance; recruitment and administration of consultants and other non-staff personnel; stock and property management, purchasing;

(d) Release 4 (August 1994): Payroll. The old system will run concurrently until the new system is fully tested in the production environment. This precaution, which is generally done only for payroll systems, is to ensure 100 per cent accuracy before the old system is cut off;

(e) Release 5 (October 1994): Complete integrated budget, investment modules, specialized office automation support including electronic data interface (for banking transactions).

12. The major change in the implementation strategy concerns the move of the expenditures control module from release 2 to release 3. Although the module will be ready at the time of implementation of release 2, it has been moved to

release 3 to avoid introducing a major change at a time when all staff resources in finance are mobilized for the closing of accounts and to ensure the integrity of the accounts for 1992-1993. The volume of data that would have had to be converted and the complexities of the changes that have taken place during the current biennium in the account codes as a result of restructuring were the main considerations that led to this change. The records concerning the financial transactions that will have occurred between January and May 1994 will be converted into IMIS.

D. System construction

13. The main reason for adjustments to the implementation plan is to ensure that the system fully meets the Organization's requirements, in particular in terms of control and financial reporting, and to ensure that proper technical support is available once the system has been implemented.

14. One of the many benefits of the project comes from the fact the system forced the Organization to reconsider, review and, whenever possible, harmonize existing procedures and rules which were, until this project, rarely reviewed in their totality. By bringing together various elements, the construction, i.e. coding, of the system has brought to evidence issues and inconsistencies that needed to be addressed. The automation of these procedures also requires their rationalization in order to ensure their global applicability and to limit the processing of exceptions, which are currently performed manually and are difficult to monitor.

15. The detailed review of the screens for the first two releases with staff members from the major duty stations that took place in June 1992 brought to light some of these issues. Others were added during the actual construction of the system. They made necessary a more detailed review and analysis of selected issues than had been expected.

16. Additional studies had therefore to be performed in particular in the area of accounting, mainly concerning technical cooperation and peace-keeping funds, and treasury before the completion of the actual construction of the first two releases; these requirements could not have been foreseen prior to the actual construction of these releases.

17. In the accounting area it became apparent that current reporting procedures for technical cooperation activities could not be modified to conform to those used elsewhere in the Organization essentially because of the requirements of the United Nations Development Programme (UNDP). This also required an additional analysis of the posting rules concerning this type of activities.

18. Further discussions were held regarding funds sufficiency checking in all accounts and cash pooling. With the introduction of the latter, the number of bank accounts presently used by Headquarters will be drastically reduced and cash will be pooled, allowing for better investment opportunity.

19. Further to these analyses, it was determined that these additional functions needed to be incorporated into the system under development to ensure that it would closely meet United Nations requirements. This led to additional

development costs and related changes in the implementation schedule. A review of the literature on the development of large systems indicates that such events are bound to occur and are part of a normal development process.

20. The thorough testing of release 1 also led to the identification of enhancements that were required, mainly in the human resources area and which became apparent to users only when the actual work was simulated during the testing.

21. The conversion of human resources data from six different existing systems was also more difficult than foreseen. IMIS has been designed with very strict logic and controls built in not only for data integrity but also to ensure that the system will be able to process fully retroactive actions. This resulted in a large proportion of the data processed being rejected and in the need to re-verify, complete and, most often, manually clean the data.

22. These new activities have been undertaken at a time when many important changes were taking place with regard to the restructuring of the Secretariat, including the redeployment of posts from administration to other areas of the Secretariat. In fact, some of the implementation activities were performed by contractors under the supervision of the IMIS team. However, notwithstanding these difficulties, release 1 was completed in January 1993. The system test was tested for three months with the participation of more than 100 users. Representatives of the Internal Audit Division attended the large majority of the test sessions.

23. The enhancements to the system that were identified as urgently needed during the testing were completed during the period June to July 1993 and tested in August.

24. In parallel, four "bridges" between IMIS and the current systems that will be phased out progressively to ensure synchronization and consistency of data were also developed and tested. They are:

(a) IMIS payroll bridge. This bridge will facilitate the comparison of the data in IMIS and in the current payroll to ensure that, when the new payroll is to be implemented, the records contained in these two systems will be consistent;

(b) Account code structure crosswalk. This bridge was made necessary by the fact that, until all financial transactions at all duty stations are performed using IMIS, there will be the need to maintain in parallel the current account code structure as well as the new one developed within the framework of IMIS;

(c) Budget post database. To ensure proper control, the staffing table function will continue to be performed in the current system until release 3 when funds control will be introduced in the system;

(d) Personnel data bridge. Information on the staff members working at the other duty stations will continue to be maintained in the office of Human Resources Management database until IMIS has been implemented at all these duty stations. It was therefore necessary to transfer data from IMIS into the OHRM

database to enable the Organization to continue producing reports for the Organization as a whole.

25. The construction of the applications that were initially foreseen to be implemented in release 2 (personnel entitlements, applications processing and expenditures control) has also been completed. This includes the coding of all the entitlements in the expert system that will determine the eligibility on the basis of the situation of each individual staff member. 8/

26. The testing of the applications to be implemented in January 1994 started in August 1993. The testing of the other applications that have already been completed will be undertaken early in 1994.

27. The design of the applications to be implemented in release 3 has also been completed. It includes prototype screens in electronic format, a definition of the edits and validations that will be included (to verify the consistency of the data and to generate error messages if necessary) and a description of the data elements included in the release.

28. The posting of the financial transactions to the appropriate ledgers will be automated as a part of release 3. Approximately 3,500 different "posting rules" have been identified and are currently being programmed.

E. Technical infrastructure and support

29. Four powerful mini-computers were installed in January 1993 and have been extensively tested since then. To access these computers, each workstation must be connected to a local area network (LAN) server. Twenty such servers have been established and configured with the necessary software to access IMIS. At the end of September 1993, about 500 workstations were connected to the system, including those needed for training and development.

30. Disaster recovery procedures have been established. The data on the database server are copied on a regular basis and a mini-computer currently used for development has been configured to support the functioning of the most required applications, such as payroll, should a major catastrophe prevent any operation in the Secretariat building.

31. The network established for IMIS is part of a larger network to be used to connect all the workstations in the Secretariat buildings. The same infrastructure is already being used for other applications; for example, while configuring the LAN servers for IMIS, the new electronic mail system is also being installed.

32. As of mid-October, the Electronic Services Division has assumed responsibility for the day-to-day operations of IMIS. This includes monitoring the LAN over which IMIS runs, managing the production database, and maintaining the operating system software on the various UNIX servers which are interconnected to house the IMIS programs and data.

33. The Electronic Services Division has also assumed full responsibility for IMIS security. This involves reviewing requests by offices to register new IMIS

users to perform selected administrative functions. A number of procedures have been set up to ensure that only authorized individuals can have access to that portion of the database which their daily work requires.

34. Early in 1993, the Electronic Services Division assumed a new organizational structure which better enables it to support the changing technological needs of the Organization, including IMIS. Additional training was given to regular Professional staff, and fully trained technical support personnel were also hired through the Electronic Services Division outsourcing programme. The Division has also consolidated its help-desk operation to allow users to call one single telephone number for any type of computer-related problem, whether it relates to equipment, software or LANs.

F. System maintenance and users' support

35. The introduction of IMIS with hundreds of users linked to the same system and very complex applications being made available on line required the development of a completely new strategy for users' support and system maintenance.

36. The ownership of the system will initially be divided between the Office of Human Resources Management, the Office of Programme Planning, Budget and Finance and the Office of General Services. Each Office will be responsible for the maintenance work of the applications related to its own area, the users' support material and tools and the substantive help-desk functions, in cooperation with the central help desk, which is under the responsibility of the Electronic Services Division.

37. The main functions assigned to these units are the following:

(a) Maintenance of the software;

(b) Related updating of the on-line help screens, the training material and other users' and system documentation;

(c) Help-desk activities to provide assistance to the users for IMIS related issues;

(d) Maintenance of other systems related to the activities of each Office until these are phased out subsequent to the completion of IMIS implementation;

(e) Assistance to offices away from Headquarters for the implementation of the system.

38. Until the completion of the development work and of the implementation of the system at offices away from Headquarters, the IMIS activities within the Department of Administration and Management will be coordinated by the IMIS team. In this way the necessary integration of the various functions will be ensured.

G. Offices away from Headquarters

39. Offices away from Headquarters have continued to be kept informed of the activities of the project through progress reports and correspondence on specific issues. It should be noted in this connection that all the preparatory work and all the tools that have been developed at Headquarters will be used, sometimes with minor modifications, at these offices.

40. In order to enable the users at these offices to familiarize themselves with the system, the IMIS electronic screens were ported to a format that permits their installation on personal computers. Copies of this program were sent to all Offices. Similarly, an electronic program containing all the technical specifications of releases 1 and 2 were sent to all technical focal points. A copy of all the training material prepared for release 1 was also sent to each office.

41. It was also decided to install, possibly before the end of the current year, at each major duty station a small server configured for IMIS and containing the software of releases 1 and 2. This server will enable each office to get better acquainted with the technology used by IMIS and to start testing the local technical environment. In addition, interested users, referring to the training documentation, will be able to practice on the system, thus creating locally a first group of advanced users who could then play an important support role at each duty station.

42. The validity of this approach needed to be tested before proceeding to the purchase of the hardware for all the duty stations. A server and release 1 software were successfully installed at the United Nations Office at Geneva in July. The software was also installed at the Office of the United Nations High Commissioner for Refugees (UNHCR) and at the International Labour Organization (ILO), in the latter case on a different platform, thus enabling the project team to evaluate the portability of the system.

43. The recruitment procedure for the local coordinators was also initiated and it is expected that they will all report during the first quarter of 1994. The coordinator for Geneva was appointed in July 1993.

44. The experience gained at Headquarters with the conversion of data for IMIS has also led to the cleansing of data maintained at Headquarters concerning staff at the other offices. In November 1993 data conversion activities concerning these offices will be initiated. An inventory of the data available will be conducted as a first step. Test data will be requested and run through the conversion processes at Headquarters to identify precisely possible difficulties in the data conversion. Equally, plans will be established with each office for the collection and entry of data in the appropriate format and on the appropriate support.

45. The existence of a server and of the software at each duty station will greatly facilitate this preparatory work. Concerning the deployment of the system at these offices, it is planned to install the entire human resources applications at all duty stations during the second half of 1994, while the financial applications would be installed during the first half of 1995.

46. The success of the installation of the test/training server in Geneva also confirmed the fact that IMIS can subsequently be deployed at mission sites.

47. Finally, representatives of each office were invited to the review of the external design of release 3 in New York at the beginning of October. This review gave them an opportunity to view the actual operational release 1 and to be briefed on the major changes made to the software for releases 1 and 2 subsequently to their visit in June 1992. This review was also attended by UNDP, the United Nations Children's Fund (UNICEF) and UNHCR representatives.

H. Interest in the system by United Nations programmes and other organizations

48. ILO and UNHCR are actively working on the customization to their specific needs of the human resources applications contained in releases 1 and 2. They expect to introduce this part of the system in the course of 1994.

49. UNDP has began an analysis of the system and of possible customization, should this be required. The software for the first release will be installed at UNDP for testing and training purposes by the end of October 1993.

50. The International Civil Aviation Organization (ICAO) pursued its active review of the system, begun in 1992. It is currently planning to install a basic infrastructure for the installation of the IMIS software for testing and review with the users.

51. The United Nations Educational, Scientific and Cultural Organization (UNESCO), the World Health Organization (WHO), the United Nations Industrial Development Organization (UNIDO), the International Atomic Energy Agency (IAEA) and the Inter-American Development Bank (IDB) staff visited New York to acquire first-hand knowledge of the system, particularly the human resources applications. They have been provided with detailed technical and functional documentation so that they can continue their analysis locally with the users and they are kept informed of the progress of work. Other organizations have requested detailed information on the system being developed.

I. Cost of the project

52. The revised detailed budget estimates of the project are contained in document A/48/6 (Section 29).

53. These estimates show a growth with respect to those submitted in the fourth progress report. This is due principally to the following factors:

(a) The increase in actual costs for consultancy services as a result of the additional functions that had to be added to the system as described in paragraph 19 above, and to the need to obtain assistance for the implementation of the system as described in paragraph 22 above;

(b) The higher than foreseen costs related to the development of the training programme and to the actual training of staff. It should be noted however that the programme, as developed, will reduce to a minimum the need to maintain a permanent training structure for IMIS;

(c) The foreseen delayed completion of the project, with the related increase in staff costs.

54. Additionally, provision is proposed under the regular budget for maintenance costs distinct from the project costs for phase 1 of IMIS.

55. It should be recalled that, as pointed out by the independent experts in their report to ACABQ, the project bears little resemblance to that originally planned in 1988. While originally the project was limited to the customization of a software developed by the Food and Agriculture Organization of the United Nations (FAO) in a traditional mainframe environment, it evolved into the design and development of a completely new system based on the most up-to-date technology. The scope of the first phase of the project had also to be expanded to encompass part of the functions initially foreseen for subsequent phases. 9/

56. It is to be considered however that the experience of the United Nations and of FAO in this area is common to that of many other public and private entities that established large computerized systems. In its report to the twenty-seventh session of the FAO Conference in late 1993, for example, the External Auditors indicated that

> "Escalating costs are a feature of many large computerization projects and the Organization's experience is not unique. In addition, although the total expected cost is significantly greater than originally envisaged, it represents a relatively small proportion of the total regular budget expenditure over the period the new system was being developed." 10/

The same comments may apply to the United Nations experience concerning IMIS.

57. Finally, it should be noted that the usage of the system by UNHCR, ILO and UNDP represents by itself a net saving for the member countries that can be estimated at an amount higher than the expected costs of the IMIS project. The possible adoption of the system by other organizations will increase even further the savings member countries will derive from the IMIS project, not only in terms of development costs but also in terms of long-term maintenance.

Notes

1/ A/C.5/43/24.

2/ Official Records of the General Assembly, Forty-third Session, Supplement No. 7 (A/43/7/Add.10).

3/ A/C.5/44/8.

4/ A/C.5/45/20.

5/ A/C.5/46/24.

6/ A/C.5/47/27.

7/ A/47/7/Add.8.

8/ A/C.5/46/24, para. 18.

9/ A/C.5/47/27, annex III.

10/ FAO Conference, Twenty-seventh Session, Financial report and statement, Volume I, Regular programme 1990-1991 (C 93/5 September 1992, para. 126).